

FIGURE 1A

| Protein | Organism | EC# | GenBank / GenPept | | SwissProt | PDB / 3D |
|--|-------------------------------|----------|--|--|------------------|----------|
| At1g08280 | <i>Arabidopsis thaliana</i> | n.d. | AC011438 BT004583 NC_003070 | AAF18241.1 AAO42829.1 NP_172305.1 | Q84W00 Q9SGD2 | |
| At1g08660/F22O13.14 | <i>Arabidopsis thaliana</i> | n.d. | AC003981 AY064135 AY124807 NC_003070 NM_180609 | AAF99778.1 AAL36042.1 AAM70516.1 NP_172342.1 NP_850940.1 | Q8VZJ0 Q9FRR9 | |
| At3g48820/T21J18_90 | <i>Arabidopsis thaliana</i> | n.d. | AY080589 AY133816 AL132963 NM_114741 | AAL85966.1 AAM91750.1 CAB87910.1 NP_190451.1 | Q8RY00 Q9M301 | |
| α -2,3-sialyltransferase (ST3GAL-IV) | <i>Bos taurus</i> | n.d. | AJ584673 | CAE48298.1 | | |
| α -2,3-sialyltransferase (St3Gal-V) | <i>Bos taurus</i> | n.d. | AJ585768 | CAE51392.1 | | |
| α -2,6-sialyltransferase (Siat7b) | <i>Bos taurus</i> | n.d. | AJ620651 | CAF05850.1 | | |
| α -2,8-sialyltransferase (SIAT8A) | <i>Bos taurus</i> | 2.4.99.8 | AJ699418 | CAG27880.1 | | |
| α -2,8-sialyltransferase (Siat8D) | <i>Bos taurus</i> | n.d. | AJ699421 | CAG27883.1 | | |
| α -2,8-sialyltransferase ST8Sia-III (Siat8C) | <i>Bos taurus</i> | n.d. | AJ704563 | CAG28696.1 | | |
| CMP α -2,6-sialyltransferase (ST6Gal I) | <i>Bos taurus</i> | 2.4.99.1 | Y15111 NM_177517 | CAA75385.1 NP_803483.1 | O18974 | |
| sialyltransferase 8 (fragment) | <i>Bos taurus</i> | n.d. | AF450088 | AAL47018.1 | Q8WN13 | |
| sialyltransferase ST3Gal-II (Siat4B) | <i>Bos taurus</i> | n.d. | AJ748841 | CAG44450.1 | | |
| sialyltransferase ST3Gal-III (Siat6) | <i>Bos taurus</i> | n.d. | AJ748842 | CAG44451.1 | | |
| sialyltransferase ST3Gal-VI (Siat10) | <i>Bos taurus</i> | n.d. | AJ748843 | CAG44452.1 | | |
| ST3Gal I | <i>Bos taurus</i> | n.d. | AJ305086 | CAC24698.1 | Q9BEG4 | |
| St6GalNAc-VI | <i>Bos taurus</i> | n.d. | AJ620949 | CAF06586.1 | | |
| CDS4 | <i>Branchiostoma floridae</i> | n.d. | AF391289 | AAM18873.1 | Q8T771 | |
| polysialyltransferase (PST) (fragment) ST8Sia IV | <i>Cercopithecus aethiops</i> | 2.4.99.- | AF210729 | AAF17105.1 | Q9TT09 | |
| polysialyltransferase (STX) (fragment) ST8Sia II | <i>Cercopithecus aethiops</i> | 2.4.99.- | AF210318 | AAF17104.1 | Q9TT10 | |
| α -2,3-sialyltransferase ST3Gal I (Siat4) | <i>Ciona intestinalis</i> | n.d. | AJ626815 | CAF25173.1 | | |
| α -2,3-sialyltransferase ST3Gal I (Siat4) | <i>Ciona savignyi</i> | n.d. | AJ626814 | CAF25172.1 | | |
| α -2,8-polysialyltransferase ST8Sia IV | <i>Cricetulus griseus</i> | 2.4.99.- | Z46801 | AAE28634 CAA86822.1 | Q64690 | |
| Gal β -1,3/4-GlcNAc α -2,3-sialyltransferase St3Gal I | <i>Cricetulus griseus</i> | n.d. | AY266675 | AAP22942.1 | Q80WL0 | |
| Gal β -1,3/4-GlcNAc α -2,3-sialyltransferase St3Gal II (fragment) | <i>Cricetulus griseus</i> | n.d. | AY266676 | AAP22943.1 | Q80WK9 | |
| α -2,3-sialyltransferase ST3Gal I (Siat4) | <i>Danio rerio</i> | n.d. | AJ783740 | CAH04017.1 | | |
| α -2,3-sialyltransferase ST3Gal II (Siat5) | <i>Danio rerio</i> | n.d. | AJ783741 | CAH04018.1 | | |

FIGURE 1B

| Protein | Organism | EC# | GenBank / GenPept | | SwissProt | PDB / 3D |
|---|--------------------------------|----------|--|---|------------------|----------|
| α -2,3-sialyltransferase ST3Gal III (Siat6) | <i>Danio rerio</i> | n.d. | AJ626821 | CAF25179.1 | | |
| α -2,3-sialyltransferase ST3Gal IV (Siat4c) | <i>Danio rerio</i> | n.d. | AJ744809 | CAG32845.1 | | |
| α -2,3-sialyltransferase ST3Gal V-r (Siat5-related) | <i>Danio rerio</i> | n.d. | AJ783742 | CAH04019.1 | | |
| α -2,6-sialyltransferase ST6Gal I (Siat1) | <i>Danio rerio</i> | n.d. | AJ744801 | CAG32837.1 | | |
| α -2,6-sialyltransferase ST6GalNAc II (Siat7B) | <i>Danio rerio</i> | n.d. | AJ634459 | CAG25680.1 | | |
| α -2,6-sialyltransferase ST6GalNAc V (Siat7E) (fragment) | <i>Danio rerio</i> | n.d. | AJ646874 | CAG26703.1 | | |
| α -2,6-sialyltransferase ST6GalNAc VI (Siat7F) (fragment) | <i>Danio rerio</i> | n.d. | AJ646883 | CAG26712.1 | | |
| α -2,8-sialyltransferase ST8Sia I (Siat 8A) (fragment) | <i>Danio rerio</i> | n.d. | AJ715535 | CAG29374.1 | | |
| α -2,8-sialyltransferase ST8Sia III (Siat 8C) (fragment) | <i>Danio rerio</i> | n.d. | AJ715543 | CAG29382.1 | | |
| α -2,8-sialyltransferase ST8Sia IV (Siat 8D) (fragment) | <i>Danio rerio</i> | n.d. | AJ715545 | CAG29384.1 | | |
| α -2,8-sialyltransferase ST8Sia V (Siat 8E) (fragment) | <i>Danio rerio</i> | n.d. | AJ715546 | CAG29385.1 | | |
| α -2,8-sialyltransferase ST8Sia VI (Siat 8F) (fragment) | <i>Danio rerio</i> | n.d. | AJ715551 | CAG29390.1 | | |
| β -galactosamide α -2,6-sialyltransferase II (ST6Gal II) | <i>Danio rerio</i> | n.d. | AJ627627 | CAF29495.1 | | |
| <i>N</i> -glycan α -2,8-sialyltransferase | <i>Danio rerio</i> | n.d. | BC050483 AY055462 NM_153662 | AAH50483.1 AAL17875.1 NP_705948.1 | Q7ZU51 Q8QH83 | |
| ST3Gal III-related (siat6r) | <i>Danio rerio</i> | n.d. | BC053179 AJ626820 NM_200355 | AAH53179.1 CAF25178.1 NP_956649.1 | Q7T3B9 | |
| St3Gal-V | <i>Danio rerio</i> | n.d. | AJ619960 | CAF04061.1 | | |
| st6GalNAc-VI | <i>Danio rerio</i> | n.d. | BC060932 AJ620947 | AAH60932.1 CAF06584.1 | | |
| α -2,6-sialyltransferase (CG4871) ST6Gal I | <i>Drosophila melanogaster</i> | 2.4.99.1 | AE003465 AF218237 AF397532 AE003465 NM_079129 NM_166684 | AAF47256.1 AAG13185.1 AAK92126.1 AAM70791.1 NP_523853.1 NP_726474.1 | Q9GU23 Q9W121 | |
| α -2,3-sialyltransferase (ST3Gal-VI) | <i>Gallus gallus</i> | n.d. | AJ585767 AJ627204 | CAE51391.1 CAF25503.1 | | |
| α -2,3-sialyltransferase ST3Gal I | <i>Gallus gallus</i> | 2.4.99.4 | X80503 NM_205217 | CAA56666.1 NP_990548.1 | Q11200 | |
| α -2,3-sialyltransferase ST3Gal IV (fragment) | <i>Gallus gallus</i> | 2.4.99.- | AF035250 | AAC14163.1 | O73724 | |
| α -2,3-sialyltransferase (ST3GAL-II) | <i>Gallus gallus</i> | n.d. | AJ585761 | CAE51385.2 | | |
| α -2,6-sialyltransferase (Siat7b) | <i>Gallus gallus</i> | n.d. | AJ620653 | CAF05852.1 | | |
| α -2,6-sialyltransferase ST6Gal I | <i>Gallus gallus</i> | 2.4.99.1 | X75558 NM_205241 | CAA53235.1 NP_990572.1 | Q92182 | |
| α -2,6-sialyltransferase | <i>Gallus gallus</i> | 2.4.99.3 | - | AAE68028.1 | Q92183 | |

FIGURE 1C

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|---|----------|----------------------|----------|--|---|--|----------|
| ST6GalNAc I | | | | - X74946 NM_205240 | AAE68029.1 CAA52902.1 NP_990571.1 | | |
| α -2,6-sialyltransferase ST6GalNAc II | | <i>Gallus gallus</i> | 2.4.99.- | X77775 NM_205233 | AAE68030.1 CAA54813.1 NP_990564.1 | Q92184 | |
| α -2,6-sialyltransferase ST6GalNAc III (SIAT7C) (fragment) | | <i>Gallus gallus</i> | n.d. | AJ634455 | CAG25677.1 | | |
| α -2,6-sialyltransferase ST6GalNAc V (SIAT7E) (fragment) | | <i>Gallus gallus</i> | n.d. | AJ646877 | CAG26706.1 | | |
| α -2,8-sialyltransferase (GD3 Synthase) ST8Sia I | | <i>Gallus gallus</i> | 2.4.99.- | U73176 | AAC28888.1 | P79783 | |
| α -2,8-sialyltransferase (SIAT8B) | | <i>Gallus gallus</i> | n.d. | AJ699419 | CAG27881.1 | | |
| α -2,8-sialyltransferase (SIAT8C) | | <i>Gallus gallus</i> | n.d. | AJ699420 | CAG27882.1 | | |
| α -2,8-sialyltransferase (SIAT8F) | | <i>Gallus gallus</i> | n.d. | AJ699424 | CAG27886.1 | | |
| α -2,8-sialyltransferase ST8Sia-V (SIAT8C) | | <i>Gallus gallus</i> | n.d. | AJ704564 | CAG28697.1 | | |
| β -galactosamide α -2,6-sialyltransferase II (ST6Gal II) | | <i>Gallus gallus</i> | n.d. | AJ627629 | CAF29497.1 | | |
| GM3 synthase (SIAT9) | | <i>Gallus gallus</i> | 2.4.99.9 | AY515255 | AAS83519.1 | | |
| polysialyltransferase ST8Sia IV | | <i>Gallus gallus</i> | 2.4.99.- | AF008194 | AAB95120.1 | O42399 | |
| α -2,3-sialyltransferase ST3Gal I | | <i>Homo sapiens</i> | 2.4.99.4 | L29555 AF059321 L13972 AF155238 AF186191 BC018357 NM_003033 NM_173344 | AAA36612.1 AAC1784.1 AAC37574.1 AAD39238.1 AAG29876.1 AAH18357.1 NP_003024.1 NP_775479.1 | Q11201 O60677 Q9UN51 | |
| α -2,3-sialyltransferase ST3Gal II | | <i>Homo sapiens</i> | 2.4.99.4 | U63090 BC036777 X96667 NM_006927 | AAB40389.1 AAH36777.1 CAA65447.1 NP_008858.1 | Q16842 O00654 | |
| α -2,3-sialyltransferase ST3Gal III (SiaT6) | | <i>Homo sapiens</i> | 2.4.99.6 | L23768 BC050380 AF425851 AF425852 AF425853 AF425854 AF425855 AF425856 AF425857 AF425858 AF425859 AF425860 AF425861 AF425862 AF425863 AF425864 AF425865 AF425866 AF425867 AY167992 AY167993 AY167994 | AAA35778.1 AAH50380.1 AAO13859.1 AAO13860.1 AAO13861.1 AAO13862.1 AAO13863.1 AAO13864.1 AAO13865.1 AAO13866.1 AAO13867.1 AAO13868.1 AAO13869.1 AAO13870.1 AAO13871.1 AAO13872.1 AAO13873.1 AAO13874.1 AAO13875.1 AO38806.1 AO38807.1 AO38808.1 | Q11203 Q86UR6 Q86UR7 Q86UR8 Q86UR9 Q86US0 Q86US1 Q86US2 Q8IX43 Q8IX44 Q8IX45 Q8IX46 Q8IX47 Q8IX48 Q8IX49 Q8IX50 Q8IX51 Q8IX52 Q8IX53 Q8IX54 Q8IX55 Q8IX56 | |

FIGURE 1D

| Protein | Organism | EC# | GenBank / GenPept | | SwissProt | PDB / 3D |
|--|---------------------|----------|--|--|--|----------|
| | | | AY167995 AY167996 AY167997 AY167998 NM_006279 NM_174964 NM_174965 NM_174966 NM_174967 NM_174969 NM_174970 NM_174972 | AAO38809.1 AAO38810.1 AAO38811.1 AAO38812.1 NP_006270.1 NP_777624.1 NP_777625.1 NP_777626.1 NP_777627.1 NP_777629.1 NP_777630.1 NP_777632.1 | Q8IX57 Q8IX58 | |
| α -2,3-sialyltransferase ST3Gal IV | <i>Homo sapiens</i> | 2.4.99.- | L23767 AF035249 BC010645 AY040826 AF516602 AF516603 AF516604 AF525084 X74570 CR456858 NM_006278 | AAA16460.1 AAC14162.1 AAH10645.1 AAK93790.1 AAM66431.1 AAM66432.1 AAM66433.1 AAM81378.1 CAA52662.1 CAG33139.1 NP_006269.1 | Q11206 O60497 Q96QQ9 Q8N6A6 Q8N6A7 Q8NFD3 Q8NFG7 | |
| α -2,3-sialyltransferase ST3Gal VI | <i>Homo sapiens</i> | 2.4.99.4 | AF119391 BC023312 AB022918 AX877828 AX886023 NM_006100 | AAD39131.1 AAH23312.1 BAA77609.1 CAE89895.1 CAF00161.1 NP_006091.1 | Q9Y274 | |
| α -2,6-sialyltransferase (ST6Gal II ; KIAA1877) | <i>Homo sapiens</i> | n.d. | BC008680 AB058780 AB059555 AJ512141 AX795193 AX795193 NM_032528 | AAH08680.1 BAB47506.1 BAC24793.1 CAD54408.1 CAE48260.1 CAE48261.1 NP_115917.1 | Q86Y44 Q8IUG7 Q96HE4 Q96JF0 | |
| α -2,6-sialyltransferase (ST6GALNAC III) | <i>Homo sapiens</i> | n.d. | BC059363 AY358540 AK091215 AJ507291 NM_152996 | AAH59363.1 AAQ88904.1 BAC03611.1 CAD45371.1 NP_694541.1 | Q8N259 Q8NDV1 | |
| α -2,6-sialyltransferase (ST6GalNAc V) | <i>Homo sapiens</i> | n.d. | BC001201 AK056241 AL035409 AJ507292 NM_030965 | AAH01201.1 BAB71127.1 CAB72344.1 CAD45372.1 NP_112227.1 | Q9BVH7 | |
| α -2,6-sialyltransferase (SThM) ST6GalNAc II | <i>Homo sapiens</i> | 2.4.99.- | U14550 BC040455 AJ251053 NM_006456 | AAA52228.1 AAH40455.1 CAB61434.1 NP_006447.1 | Q9UJ37 Q12971 | |
| α -2,6-sialyltransferase ST6Gal I | <i>Homo sapiens</i> | 2.4.99.1 | BC031476 BC040009 A17362 A23699 X17247 X54363 X62822 NM_003032 NM_173216 | AAH31476.1 AAH40009.1 CAA01327.1 CAA01686.1 CAA35111.1 CAA38246.1 CAA44634.1 NP_003023.1 NP_775323.1 | P15907 | |
| α -2,6-sialyltransferase ST6GalNAc I | <i>Homo sapiens</i> | 2.4.99.3 | BC022462 AY096001 AY358918 AK000113 Y11339 | AAH22462.1 AAM22800.1 AAQ89277.1 BAA90953.1 CAA72179.2 | Q8TBJ6 Q9NSC7 Q9NXQ7 | |

FIGURE 1E

| Protein | Organism | EC# | GenBank / GenPept | | SwissProt | PDB / 3D |
|---|---------------------|----------|---|---|--|----------|
| | | | NM_018414 | NP_060884.1 | | |
| α -2,8-polysialyltransferase ST8Sia IV | <i>Homo sapiens</i> | 2.4.99.- | L41680 BC027866 BC053657 NM_005668 | AAC41775.1 AAH27866.1 AAH53657.1 NP_005659.1 | Q8N1F4 Q92187 Q92693 | |
| α -2,8-sialyltransferase (GD3 synthase) ST8Sia I | <i>Homo sapiens</i> | 2.4.99.8 | L32867 L43494 BC046158 - AY569975 D26360 X77922 NM_003034 | AAA62366.1 AAC37586.1 AAH46158.1 AAQ53140.1 AAS75783.1 BAA05391.1 CAA54891.1 NP_003025.1 | Q86X71 Q92185 Q93064 | |
| α -2,8-sialyltransferase ST8Sia II | <i>Homo sapiens</i> | 2.4.99.- | L29556 U82762 U33551 BC069584 NM_006011 | AAA36613.1 AAB51242.1 AAC24458.1 AAH69584.1 NP_006002.1 | Q92186 Q92470 Q92746 | |
| α -2,8-sialyltransferase ST8Sia III | <i>Homo sapiens</i> | 2.4.99.- | AF004668 AF003092 NM_015879 | AAB87642.1 AAC15901.2 NP_056963.1 | O43173 Q9NS41 | |
| α -2,8-sialyltransferase ST8Sia V | <i>Homo sapiens</i> | 2.4.99.- | U91641 CR457037 NM_013305 | AAC51727.1 CAG33318.1 NP_037437.1 | O15466 | |
| ENSP00000020221 (fragment) | | n.d. | AC023295 | - | | |
| lactosylceramide α -2,3-sialyltransferase (ST3Gal V) | <i>Homo sapiens</i> | 2.4.99.9 | AF105026 AF119415 BC065936 AY152815 AAP65066 AY359105 AB018356 AX876536 NM_003896 | AAD14634.1 AAF66146.1 AAH65936.1 AAO16866.1 AAP65066.1 AAQ89463.1 BAA33950.1 CAE89320.1 NP_003887.2 | Q9UNP4 O94902 | |
| <i>N</i> -acetylgalactosaminide α -2,6-sialyltransferase (ST6GalNAc VI) | <i>Homo sapiens</i> | 2.4.99.- | BC006564 BC007802 BC016299 AY358672 AB035173 AK023900 AJ507293 AX880950 CR457318 NM_013443 | AAH06564.1 AAH07802.1 AAH16299.1 AAQ89035.1 BAA87035.1 BAB14715.1 CAD45373.1 CAE91145.1 CAG33599.1 NP_038471.2 | Q969X2 Q9H8A2 Q9ULB8 | |
| <i>N</i> -acetylgalactosaminide α -2,6-sialyltransferase IV (ST6GalNAc IV) | <i>Homo sapiens</i> | 2.4.99.- | AF127142 BC036705 - AB035172 AK000600 Y17461 AJ271734 AX061620 AX068265 AX969252 NM_014403 NM_175039 | AAF00102.1 AAH36705.1 AAP63349.1 BAA87034.1 BAA91281.1 CAB44354.1 CAC07404.1 CAC24981.1 CAC27250.1 CAF14360.1 NP_055218.3 NP_778204.1 | Q9H4F1 Q9NWU6 Q9UKU1 Q9ULB9 Q9Y3G3 Q9Y3G4 | |
| ST8SIA-VI (fragment) | <i>Homo sapiens</i> | n.d. | AJ621583 XM_291725 | CAF21722.1 XP_291725.2 | | |
| unnamed protein product | <i>Homo sapiens</i> | n.d. | AK021929 AX881696 | BAB13940.1 CAE91353.1 | Q9HAA9 | |
| Gal β -1,3/4-GlcNAc α - | <i>Mesocricetus</i> | 2.4.99.6 | AJ245699 | CAB53394.1 | Q9QXF6 | |

FIGURE 1F

| Protein | Organism | EC# | GenBank / GenPept | | SwissProt | PDB / 3D |
|---|-----------------------------|---------------------|-------------------|--|--|---|
| 2,3-sialyltransferase (ST3Gal III) | <i>auratus</i> | | | | | |
| Gal β -1,3/4-GlcNAc α -2,3-sialyltransferase (ST3Gal IV) | <i>Mesocricetus auratus</i> | 2.4.99.6 | AJ245700 | CAB53395.1 | Q9QXF5 | |
| GD3 synthase (fragment) ST8Sia I | <i>Mesocricetus auratus</i> | n.d. | AF141657 | AAD33879.1 | Q9WUL1 | |
| polysialyltransferase (ST8Sia IV) | <i>Mesocricetus auratus</i> | 2.4.99.- | AJ245701 | CAB53396.1 | Q9QXF4 | |
| α -2,3-sialyltransferase ST3Gal I | <i>St3gal1</i> | <i>Mus musculus</i> | 2.4.99.4 | AF214028 AK031344 AK078469 X73523 NM_009177 | AAF60973.1 BAC27356.1 BAC37290.1 CAA51919.1 NP_033203.1 | P54751 Q11202 Q9JL30 |
| α -2,3-sialyltransferase ST3Gal II | <i>St3gal2</i> | <i>Mus musculus</i> | 2.4.99.4 | BC015264 BC066064 AK034554 AK034863 AK053827 X76989 NM_009179 NM_178048 | AAH15264.1 AAH66064.1 BAC28752.1 BAC28859.1 BAC35543.1 CAA54294.1 NP_033205.1 NP_835149.1 | Q11204 Q8BPL0 Q8BSA0 Q8BSE9 Q91WH6 |
| α -2,3-sialyltransferase ST3Gal III | <i>St3gal3</i> | <i>Mus musculus</i> | 2.4.99.- | BC006710 AK005053 AK013016 X84234 NM_009176 | AAH06710.1 BAB23779.1 BAB28598.1 CAA59013.1 NP_033202.2 | P97325 Q922X5 Q9CZ48 Q9DBB6 |
| α -2,3-sialyltransferase ST3Gal IV | <i>St3gal4</i> | <i>Mus musculus</i> | 2.4.99.4 | BC011121 BC050773 D28941 AK008543 AB061305 X95809 NM_009178 | AAH11121.1 AAH50773.1 BAA06068.1 BAB25732.1 BAB47508.1 CAA65076.1 NP_033204.2 | P97354 Q61325 Q91Y74 Q921R5 Q9CVE8 |
| α -2,3-sialyltransferase ST3Gal VI | <i>St3gal6</i> | <i>Mus musculus</i> | 2.4.99.4 | AF119390 BC052338 AB063326 AK033562 AK041173 NM_018784 | AAD39130.1 AAH52338.1 BAB79494.1 BAC28360.1 BAC30851.1 NP_061254 | Q80UR7 Q8BLV1 Q8VIB3 Q9WVG2 |
| α -2,6-sialyltransferase ST6GalNAc II | <i>St6galnac2</i> | <i>Mus musculus</i> | 2.4.99.- | NM_009180 BC010208 AB027198 AK004613 X93999 X94000 NM_009180 | 6677963 AAH10208.1 BAB00637.1 BAB23410.1 CAA63821.1 CAA63822.1 NP_033206.2 | P70277 |
| α -2,6-sialyltransferase ST6Gal I | <i>St6gal1</i> | <i>Mus musculus</i> | 2.4.99.1 | - BC027833 D16106 AK034768 AK084124 NM_145933 | AAE68031.1 AAH27833.1 BAA03680.1 BAC28828.1 BAC39120.1 NP_666045.1 | Q64685 Q8BM62 Q8K1L1 |
| α -2,6-sialyltransferase ST6Gal II | <i>St6gal2</i> | <i>Mus musculus</i> | n.d. | AK082566 AB095093 AK129462 NM_172829 | BAC38534.1 BAC87752.1 BAC98272.1 NP_766417.1 | Q8BUU4 |
| α -2,6-sialyltransferase ST6GalNAc I | <i>St6galnac1</i> | <i>Mus musculus</i> | 2.4.99.3 | Y11274 NM_011371 | CAA72137.1 NP_035501.1 | Q9QZ39 Q9JJP5 |
| α -2,6-sialyltransferase ST6GalNAc III | <i>St6galnac3</i> | <i>Mus musculus</i> | n.d. | BC058387 AK034804 Y11342 Y11343 | AAH58387.1 BAC28836.1 CAA72181.2 CAB95031.1 | Q9WUV2 Q9JHP5 |

FIGURE 1G

| Protein | Organism | | EC# | GenBank / GenPept | | SwissProt | PDB / 3D |
|--|-------------------|---------------------|----------|---|--|--|----------|
| | | | | NM_011372 | NP_035502 | | |
| α -2,6-sialyltransferase ST6GalNAc IV | <i>St6galnac4</i> | <i>Mus musculus</i> | 2.4.99.7 | BC056451 AK085730 AJ007310 Y15779 Y15780 Y19055 Y19057 NM_011373 | AAH56451.1 BAC39523.1 CAA07446.1 CAB43507.1 CAB43514.1 CAB93946.1 CAB93948.1 NP_035503.1 | Q8C3J2 Q9JHP2 Q9R2B6 O88725 Q9JHP0 Q9QUP9 Q9R2B5 | |
| α -2,8-sialyltransferase (GD3 synthase) ST8Sia I | <i>St8sia1</i> | <i>Mus musculus</i> | 2.4.99.8 | L38677 BC024821 AK046188 AK052444 X84235 AJ401102 NM_011374 | AAA91869.1 AAH24821.1 BAC32625.1 BAC34994.1 CAA59014.1 CAC20706.1 NP_035504.1 | Q64468 Q64687 Q8BL76 Q8BW10 Q8K1C1 Q9EPK0 | |
| α -2,8-sialyltransferase (ST8Sia VI) | <i>St8sia6</i> | <i>Mus musculus</i> | n.d. | AB059554 AK085105 NM_145838 | BAC01265.1 BAC39367.1 NP_665837.1 | Q8BI43 Q8K4T1 | |
| α -2,8-sialyltransferase ST8Sia II | <i>St8sia2</i> | <i>Mus musculus</i> | 2.4.99.- | X83562 X99646 X99647 X99648 X99649 X99650 X99651 NM_009181 | CAA58548.1 CAA67965.1 CAA67965.1 CAA67965.1 CAA67965.1 CAA67965.1 CAA67965.1 NP_033207.1 | O35696 | |
| α -2,8-sialyltransferase ST8Sia IV | <i>St8sia4</i> | <i>Mus musculus</i> | 2.4.99.8 | BC060112 AK003690 AK041723 AJ223956 X86000 Y09484 NM_009183 | AAH60112.1 BAB22941.1 BAC31044.1 CAA11685.1 CAA59992.1 CAA70692.1 NP_033209.1 | Q64692 Q8BY70 | |
| α -2,8-sialyltransferase ST8Sia V | <i>St8sia5</i> | <i>Mus musculus</i> | 2.4.99.- | BC034855 AK078670 X98014 X98014 X98014 NM_013666 NM_153124 NM_177416 | AAH34855.1 BAC37354.1 CAA66642.1 CAA66643.1 CAA66644.1 NP_038694.1 NP_694764.1 NP_803135.1 | P70126 P70127 P70128 Q8BJW0 Q8JZQ3 | |
| α -2,8-sialyltransferase ST8Sia III | <i>St8sia3</i> | <i>Mus musculus</i> | 2.4.99.- | BC075645 AK015874 X80502 NM_009182 | AAH75645.1 BAB30012.1 CAA56665.1 NP_033208.1 | Q64689 Q9CUJ6 | |
| GD1 synthase (ST6GalNAc V) | <i>St6galnac5</i> | <i>Mus musculus</i> | n.d. | BC055737 AB030836 AB028840 AK034387 AK038434 AK042683 NM_012028 | AAH55737.1 BAA85747.1 BAA89292.1 BAC28693.1 BAC29997.1 BAC31331.1 NP_036158.2 | Q8CAM7 Q8CBX1 Q9QYJ1 Q9R0K6 | |
| GM3 synthase (α -2,3-sialyltransferase) ST3Gal V | <i>St3gal5</i> | <i>Mus musculus</i> | 2.4.99.9 | AF119416 AB018048 AB013302 AK012961 Y15003 NM_011375 | AAF66147.1 AAP65063.1 BAA33491.1 BAA76467.1 BAB28571.1 CAA75235.1 NP_035505.1 | O88829 Q9CZ65 Q9QWF9 | |
| <i>N</i> -acetylgalactosaminide α -2,6-sialyltransferase (ST6GalNAc VI) | <i>St6galnac6</i> | <i>Mus musculus</i> | 2.4.99.- | BC036985 AB035174 AB035123 AK030648 | AAH36985.1 BAA87036.1 BAA95940.1 BAC27064.1 | Q8CDC3 Q8JZW3 Q9JM95 Q9R0G9 | |

FIGURE 1H

| Protein | Organism | EC# | GenBank / GenPept | | SwissProt | PDB / 3D |
|--|---|----------|---------------------------------|--|-----------|----------|
| | | | NM_016973 | NP_058669.1 | | |
| M138L | <i>Myxoma virus</i> | n.d. | U46578 AF170726 NC_001132 | AAD00069.1 AAE61323.1 AAE61326.1 AAF15026.1 NP_051852.1 | | |
| α -2,3-sialyltransferase (St3Gal-I) | <i>Oncorhynchus mykiss</i> | n.d. | AJ585760 | CAE51384.1 | | |
| α -2,6-sialyltransferase (Siat1) | <i>Oncorhynchus mykiss</i> | n.d. | AJ620649 | CAF05848.1 | | |
| α -2,8-polysialyltransferase IV (ST8Sia IV) | <i>Oncorhynchus mykiss</i> | n.d. | AB094402 | BAC77411.1 | Q7T2X5 | |
| GalNAc α -2,6-sialyltransferase (RtST6GalNAc) | <i>Oncorhynchus mykiss</i> | n.d. | AB097943 | BAC77520.1 | Q7T2X4 | |
| α -2,3-sialyltransferase ST3Gal IV | <i>Oryctolagus cuniculus</i> | 2.4.99.- | AF121967 | AAF28871.1 | Q9N257 | |
| OJ1217_F02.7 | <i>Oryza sativa (japonica cultivar-group)</i> | n.d. | AP004084 | BAD07616.1 | | |
| OSJNBa0043L24.2 or OSJNBb0002J11.9 | <i>Oryza sativa (japonica cultivar-group)</i> | n.d. | AL731626 AL662969 | CAD41185.1 CAE04714.1 | | |
| P0683f02.18 or P0489B03.1 | <i>Oryza sativa (japonica cultivar-group)</i> | n.d. | AP003289 AP003794 | BAB63715.1 BAB90552.1 | | |
| α -2,6-sialyltransferase ST6GalNAc V (Siat7E) (fragment) | <i>Oryzias latipes</i> | n.d. | AJ646876 | CAG26705.1 | | |
| α -2,3-sialyltransferase ST3Gal I (Siat4) | <i>Pan troglodytes</i> | n.d. | AJ744803 | CAG32839.1 | | |
| α -2,3-sialyltransferase ST3Gal II (Siat5) | <i>Pan troglodytes</i> | n.d. | AJ744804 | CAG32840.1 | | |
| α -2,3-sialyltransferase ST3Gal III (Siat6) | <i>Pan troglodytes</i> | n.d. | AJ626819 | CAF25177.1 | | |
| α -2,3-sialyltransferase ST3Gal IV (Siat4c) | <i>Pan troglodytes</i> | n.d. | AJ626824 | CAF25182.1 | | |
| α -2,3-sialyltransferase ST3Gal VI (Siat10) | <i>Pan troglodytes</i> | n.d. | AJ744808 | CAG32844.1 | | |
| α -2,6-sialyltransferase (Sia7A) | <i>Pan troglodytes</i> | n.d. | AJ748740 | CAG38615.1 | | |
| α -2,6-sialyltransferase (Sia7B) | <i>Pan troglodytes</i> | n.d. | AJ748741 | CAG38616.1 | | |
| α -2,6-sialyltransferase ST6GalNAc III (Siat7C) | <i>Pan troglodytes</i> | n.d. | AJ634454 | CAG25676.1 | | |
| α -2,6-sialyltransferase ST6GalNAc IV (Siat7D) (fragment) | <i>Pan troglodytes</i> | n.d. | AJ646870 | CAG26699.1 | | |
| α -2,6-sialyltransferase ST6GalNAc V (Siat7E) | <i>Pan troglodytes</i> | n.d. | AJ646875 | CAG26704.1 | | |
| α -2,6-sialyltransferase ST6GalNAc VI (Siat7F) (fragment) | <i>Pan troglodytes</i> | n.d. | AJ646882 | CAG26711.1 | | |
| α -2,8-sialyltransferase 8A (Siat8A) | <i>Pan troglodytes</i> | 2.4.99.8 | AJ697658 | CAG26896.1 | | |
| α -2,8-sialyltransferase 8B (Siat8B) | <i>Pan troglodytes</i> | n.d. | AJ697659 | CAG26897.1 | | |
| α -2,8-sialyltransferase 8C (Siat8C) | <i>Pan troglodytes</i> | n.d. | AJ697660 | CAG26898.1 | | |
| α -2,8-sialyltransferase 8D (Siat8D) | <i>Pan troglodytes</i> | n.d. | AJ697661 | CAG26899.1 | | |
| α -2,8-sialyltransferase | <i>Pan troglodytes</i> | n.d. | AJ697662 | CAG26900.1 | | |

FIGURE 1I

| Protein | Organism | EC# | GenBank / GenPept | | SwissProt | PDB / 3D |
|--|-----------------------------------|----------|---------------------------------|---|------------------|----------|
| 8E (Siat8E) | | | | | | |
| α -2,8-sialyltransferase 8F (Siat8F) | <i>Pan troglodytes</i> | n.d. | AJ697663 | CAG26901.1 | | |
| β -galactosamide α -2,6-sialyltransferase I (ST6Gal I; Siat1) | <i>Pan troglodytes</i> | 2.4.99.1 | AJ627624 | CAF29492.1 | | |
| β -galactosamide α -2,6-sialyltransferase II (ST6Gal II) | <i>Pan troglodytes</i> | n.d. | AJ627625 | CAF29493.1 | | |
| GM3 synthase ST3Gal V (Siat9) | <i>Pan troglodytes</i> | n.d. | AJ744807 | CAG32843.1 | | |
| S138L | <i>Rabbit fibroma virus Kasza</i> | n.d. | NC_001266 | NP_052025 | | |
| α -2,3-sialyltransferase ST3Gal III | <i>Rattus norvegicus</i> | 2.4.99.6 | M97754 NM_031697 | AAA42146.1 NP_113885.1 | Q02734 | |
| α -2,3-sialyltransferase ST3Gal IV (Siat4c) | <i>Rattus norvegicus</i> | n.d. | AJ626825 | CAF25183.1 | | |
| α -2,3-sialyltransferase ST3Gal VI | <i>Rattus norvegicus</i> | n.d. | AJ626743 | CAF25053.1 | | |
| α -2,6-sialyltransferase ST3Gal II | <i>Rattus norvegicus</i> | 2.4.99.- | X76988 NM_031695 | CAA54293.1 NP_113883.1 | Q11205 | |
| α -2,6-sialyltransferase ST6Gal I | <i>Rattus norvegicus</i> | 2.4.99.1 | M18769 M83143 | AAA41196.1 AAB07233.1 | P13721 | |
| α -2,6-sialyltransferase ST6GalNAc I (Siat7A) | <i>Rattus norvegicus</i> | n.d. | AJ634458 | CAG25684.1 | | |
| α -2,6-sialyltransferase ST6GalNAc II (Siat7B) | <i>Rattus norvegicus</i> | n.d. | AJ634457 | CAG25679.1 | | |
| α -2,6-sialyltransferase ST6GalNAc III | <i>Rattus norvegicus</i> | 2.4.99.- | L29554 BC072501 NM_019123 | AAC42086.1 AAH72501.1 NP_061996.1 | Q64686 | |
| α -2,6-sialyltransferase ST6GalNAc IV (Siat7D) (fragment) | <i>Rattus norvegicus</i> | n.d. | AJ646871 | CAG26700.1 | | |
| α -2,6-sialyltransferase ST6GalNAc V (Siat7E) | <i>Rattus norvegicus</i> | n.d. | AJ646872 | CAG26701.1 | | |
| α -2,6-sialyltransferase ST6GalNAc VI (Siat7F) (fragment) | <i>Rattus norvegicus</i> | n.d. | AJ646881 | CAG26710.1 | | |
| α -2,8-sialyltransferase (GD3 synthase) ST8Sia | <i>Rattus norvegicus</i> | 2.4.99.- | U53883 D45255 | AAC27541.1 BAA08213.1 | P70554 P97713 | |
| α -2,8-sialyltransferase (SIAT8E) | <i>Rattus norvegicus</i> | n.d. | AJ699422 | CAG27884.1 | | |
| α -2,8-sialyltransferase (SIAT8F) | <i>Rattus norvegicus</i> | n.d. | AJ699423 | CAG27885.1 | | |
| α -2,8-sialyltransferase ST8Sia II | <i>Rattus norvegicus</i> | 2.4.99.- | L13445 NM_057156 | AAA42147.1 NP_476497.1 | Q07977 Q64688 | |
| α -2,8-sialyltransferase ST8Sia III | <i>Rattus norvegicus</i> | 2.4.99.- | U55938 NM_013029 | AAB50061.1 NP_037161.1 | P97877 | |
| α -2,8-sialyltransferase ST8Sia IV | <i>Rattus norvegicus</i> | 2.4.99.- | U90215 | AAB49989.1 | O08563 | |
| β -galactosamide α -2,6-sialyltransferase II (ST6Gal II) | <i>Rattus norvegicus</i> | n.d. | AJ627626 | CAF29494.1 | | |
| GM3 synthase ST3Gal V | <i>Rattus norvegicus</i> | n.d. | AB018049 NM_031337 | BAA33492.1 NP_112627.1 | O88830 | |

FIGURE 1J

| Protein | Organism | EC# | GenBank / GenPept | SwissProt | PDB / 3D |
|---|--------------------------------------|----------|--------------------|--|---------------|
| sialyltransferase ST3Gal-I (Siat4A) | <i>Rattus norvegicus</i> | n.d. | AJ748840 | CAG44449.1 | |
| α -2,3-sialyltransferase (St3Gal-II) | <i>Silurana tropicalis</i> | n.d. | AJ585763 | CAE51387.1 | |
| α -2,6-sialyltransferase (Siat7b) | <i>Silurana tropicalis</i> | n.d. | AJ620650 | CAF05849.1 | |
| α -2,6-sialyltransferase (St6galnac) | <i>Strongylocentrotus purpuratus</i> | n.d. | AJ699425 | CAG27887.1 | |
| α -2,3-sialyltransferase (ST3GAL-III) | <i>Sus scrofa</i> | n.d. | AJ585765 | CAE51389.1 | |
| α -2,3-sialyltransferase (ST3GAL-IV) | <i>Sus scrofa</i> | n.d. | AJ584674 | CAE48299.1 | |
| α -2,3-sialyltransferase ST3Gal I | <i>Sus scrofa</i> | 2.4.99.4 | M97753 | AAA31125.1 | Q02745 |
| α -2,6-sialyltransferase (fragment) ST6Gal I | <i>Sus scrofa</i> | 2.4.99.1 | AF136746 | AAD33059.1 | Q9XSG8 |
| α -galactosamide α -2,6-sialyltransferase (ST6GalNAc-V) | <i>Sus scrofa</i> | n.d. | AJ620948 | CAF06585.2 | |
| sialyltransferase (fragment) ST6Gal I | <i>Sus scrofa</i> | n.d. | AF041031 | AAC15633.1 | O62717 |
| ST6GALNAC-V | <i>Sus scrofa</i> | n.d. | AJ620948 | CAF06585.1 | |
| α -2,3-sialyltransferase (Siat5-r) | <i>Takifugu rubripes</i> | n.d. | AJ744805 | CAG32841.1 | |
| α -2,3-sialyltransferase ST3Gal I (Siat4) | <i>Takifugu rubripes</i> | n.d. | AJ626816 | CAF25174.1 | |
| α -2,3-sialyltransferase ST3Gal II (Siat5) (fragment) | <i>Takifugu rubripes</i> | n.d. | AJ626817 | CAF25175.1 | |
| α -2,3-sialyltransferase ST3Gal III (Siat6) | <i>Takifugu rubripes</i> | n.d. | AJ626818 | CAF25176.1 | |
| α -2,6-sialyltransferase ST6Gal I (Siat1) | <i>Takifugu rubripes</i> | n.d. | AJ744800 | CAG32836.1 | |
| α -2,6-sialyltransferase ST6GalNAc II (Siat7B) | <i>Takifugu rubripes</i> | n.d. | AJ634460 | CAG25681.1 | |
| α -2,6-sialyltransferase ST6GalNAc II B (Siat7B-related) | <i>Takifugu rubripes</i> | n.d. | AJ634461 | CAG25682.1 | |
| α -2,6-sialyltransferase ST6GalNAc III (Siat7C) (fragment) | <i>Takifugu rubripes</i> | n.d. | AJ634456 | CAG25678.1 | |
| α -2,6-sialyltransferase ST6GalNAc IV (siat7D) (fragment) | <i>Takifugu rubripes</i> | 2.4.99.3 | Y17466 AJ646869 | CAB44338.1 CAG26698.1 | Q9W6U6 |
| α -2,6-sialyltransferase ST6GalNAc V (Siat7E) (fragment) | <i>Takifugu rubripes</i> | n.d. | AJ646873 | CAG26702.1 | |
| α -2,6-sialyltransferase ST6GalNAc VI (Siat7F) (fragment) | <i>Takifugu rubripes</i> | n.d. | AJ646880 | CAG26709.1 | |
| α -2,8-sialyltransferase ST8Sia I (Siat 8A) (fragment) | <i>Takifugu rubripes</i> | n.d. | AJ715534 | CAG29373.1 | |
| α -2,8-sialyltransferase ST8Sia II (Siat 8B) (fragment) | <i>Takifugu rubripes</i> | n.d. | AJ715538 | CAG29377.1 | |
| α -2,8-sialyltransferase ST8Sia III (Siat 8C) (fragment) | <i>Takifugu rubripes</i> | n.d. | AJ715541 | CAG29380.1 | |
| α -2,8-sialyltransferase ST8Sia IIIr (Siat 8Cr) | <i>Takifugu rubripes</i> | n.d. | AJ715542 | CAG29381.1 | |
| α -2,8-sialyltransferase ST8Sia V (Siat 8E) | <i>Takifugu rubripes</i> | n.d. | AJ715547 | CAG29386.1 | |

FIGURE 1K

| Protein | Organism | EC# | GenBank / GenPept | | SwissProt | PDB / 3D |
|--|-------------------------------|----------|----------------------------------|---|---------------|----------|
| (fragment) | | | | | | |
| α -2,8-sialyltransferase ST8Sia VI (Siat 8F) (fragment) | <i>Takifugu rubripes</i> | n.d. | AJ715549 | CAG29388.1 | | |
| α -2,8-sialyltransferase ST8Sia Vlr (Siat 8Fr) | <i>Takifugu rubripes</i> | n.d. | AJ715550 | CAG29389.1 | | |
| α -2,3-sialyltransferase (Siat5-r) | <i>Tetraodon nigroviridis</i> | n.d. | AJ744806 | CAG32842.1 | | |
| α -2,3-sialyltransferase ST3Gal I (Siat4) | <i>Tetraodon nigroviridis</i> | n.d. | AJ744802 | CAG32838.1 | | |
| α -2,3-sialyltransferase ST3Gal III (Siat6) | <i>Tetraodon nigroviridis</i> | n.d. | AJ626822 | CAF25180.1 | | |
| α -2,6-sialyltransferase ST6GalNAc II (Siat7B) | <i>Tetraodon nigroviridis</i> | n.d. | AJ634462 | CAG25683.1 | | |
| α -2,6-sialyltransferase ST6GalNAc V (Siat7E) (fragment) | <i>Tetraodon nigroviridis</i> | n.d. | AJ646879 | CAG26708.1 | | |
| α -2,8-sialyltransferase ST8Sia I (Siat 8A) (fragment) | <i>Tetraodon nigroviridis</i> | n.d. | AJ715536 | CAG29375.1 | | |
| α -2,8-sialyltransferase ST8Sia II (Siat 8B) (fragment) | <i>Tetraodon nigroviridis</i> | n.d. | AJ715537 | CAG29376.1 | | |
| α -2,8-sialyltransferase ST8Sia III (Siat 8C) (fragment) | <i>Tetraodon nigroviridis</i> | n.d. | AJ715539 | CAG29378.1 | | |
| α -2,8-sialyltransferase ST8Sia IIIr (Siat 8Cr) (fragment) | <i>Tetraodon nigroviridis</i> | n.d. | AJ715540 | CAG29379.1 | | |
| α -2,8-sialyltransferase ST8Sia V (Siat 8E) (fragment) | <i>Tetraodon nigroviridis</i> | n.d. | AJ715548 | CAG29387.1 | | |
| α -2,3-sialyltransferase (St3Gal-II) | <i>Xenopus laevis</i> | n.d. | AJ585762 | CAE51386.1 | | |
| α -2,3-sialyltransferase (St3Gal-VI) | <i>Xenopus laevis</i> | n.d. | AJ585766 | CAE51390.1 | | |
| α -2,3-sialyltransferase St3Gal-III (Siat6) | <i>Xenopus laevis</i> | n.d. | AJ585764 AJ626823 | CAE51388.1 CAF25181.1 | | |
| α -2,8-polysialyltransferase | <i>Xenopus laevis</i> | 2.4.99.- | AB007468 | BAA32617.1 | O93234 | |
| α -2,8-sialyltransferase ST8Sia-I (Siat8A;GD3 synthase) | <i>Xenopus laevis</i> | n.d. | AY272056 AY272057 AJ704562 | AAQ16162.1 AAQ16163.1 CAG28695.1 | | |
| Unknown (protein for MGC:81265) | <i>Xenopus laevis</i> | n.d. | BC068760 | AAH68760.1 | | |
| α -2,3-sialyltransferase (3Gal-VI) | <i>Xenopus tropicalis</i> | n.d. | AJ626744 | CAF25054.1 | | |
| α -2,3-sialyltransferase (Siat4c) | <i>Xenopus tropicalis</i> | n.d. | AJ622908 | CAF22058.1 | | |
| α -2,6-sialyltransferase ST6GalNAc V (Siat7E) (fragment) | <i>Xenopus tropicalis</i> | n.d. | AJ646878 | CAG26707.1 | | |
| α -2,8-sialyltransferase ST8Sia III (Siat 8C) (fragment) | <i>Xenopus tropicalis</i> | n.d. | AJ715544 | CAG29383.1 | | |
| α -galactosamide α -2,6-sialyltransferase II (ST6Gal II) | <i>Xenopus tropicalis</i> | n.d. | AJ627628 | CAF29496.1 | | |
| sialyltransferase St8Sial | <i>Xenopus tropicalis</i> | n.d. | AY652775 | AAT67042 | | |
| poly- α -2,8-sialosyl sialyltransferase (NeuS) | <i>Escherichia coli K1</i> | 2.4.-- | M76370 X60598 | AAA24213.1 CAA43053.1 | Q57269 | |
| polysialyltransferase | <i>Escherichia coli K92</i> | 2.4.-- | M88479 | AAA24215.1 | Q47404 | |

FIGURE 1L

| Protein | Organism | EC# | GenBank / GenPept | | SwissProt | PDB / 3D |
|---|---|----------|---------------------------------|--|------------------|----------|
| α -2,8 polysialyltransferase SiaD | <i>Neisseria meningitidis</i> B1940 | 2.4.-- | M95053 X78068 | AAA20478.1 CAA54985.1 | Q51281 Q51145 | |
| SynE | <i>Neisseria meningitidis</i> FAM18 | n.d. | U75650 | AAB53842.1 | O06435 | |
| polysialyltransferase (SiaD)(fragment) | <i>Neisseria meningitidis</i> M1019 | n.d. | AY234192 | AAO85290.1 | | |
| SiaD (fragment) | <i>Neisseria meningitidis</i> M209 | n.d. | AY281046 | AAP34769.1 | | |
| SiaD (fragment) | <i>Neisseria meningitidis</i> M3045 | n.d. | AY281044 | AAP34767.1 | | |
| polysialyltransferase (SiaD)(fragment) | <i>Neisseria meningitidis</i> M3315 | n.d. | AY234191 | AAO85289.1 | | |
| SiaD (fragment) | <i>Neisseria meningitidis</i> M3515 | n.d. | AY281047 | AAP34770.1 | | |
| polysialyltransferase (SiaD)(fragment) | <i>Neisseria meningitidis</i> M4211 | n.d. | AY234190 | AAO85288.1 | | |
| SiaD (fragment) | <i>Neisseria meningitidis</i> M4642 | n.d. | AY281048 | AAP34771.1 | | |
| polysialyltransferase (SiaD)(fragment) | <i>Neisseria meningitidis</i> M5177 | n.d. | AY234193 | AAO85291.1 | | |
| SiaD | <i>Neisseria meningitidis</i> M5178 | n.d. | AY281043 | AAP34766.1 | | |
| SiaD (fragment) | <i>Neisseria meningitidis</i> M980 | n.d. | AY281045 | AAP34768.1 | | |
| NMB0067 | <i>Neisseria meningitidis</i> MC58 | n.d. | NC_003112 | NP_273131 | | |
| Lst | <i>Aeromonas punctata</i> Sch3 | n.d. | AF126256 | AAS66624.1 | | |
| ORF2 | <i>Haemophilus influenzae</i> A2 | n.d. | M94855 | AAA24979.1 | | |
| HI1699 | <i>Haemophilus influenzae</i> Rd | n.d. | U32842 NC_000907 | AAC23345.1 NP_439841.1 | Q48211 | |
| α -2,3-sialyltransferase | <i>Neisseria gonorrhoeae</i> F62 | 2.4.99.4 | U60664 | AAC44539.1 AAE67205.1 | P72074 | |
| α -2,3-sialyltransferase | <i>Neisseria meningitidis</i> 126E, NRCC 4010 | 2.4.99.4 | U60662 | AAC44544.2 | | |
| α -2,3-sialyltransferase | <i>Neisseria meningitidis</i> 406Y, NRCC 4030 | 2.4.99.4 | U60661 | AAC44543.1 | | |
| α -2,3-sialyltransferase (NMB0922) | <i>Neisseria meningitidis</i> MC58 | 2.4.99.4 | U60660 AE002443 NC_003112 | AAC44541.1 AAF41330.1 NP_273962.1 | P72097 | |
| NMA1118 | <i>Neisseria meningitidis</i> Z2491 | n.d. | AL162755 NC_003116 | CAB84380.1 NP_283887.1 | Q9JUV5 | |
| PM0508 | <i>Pasteurella multocida</i> PM70 | n.d. | AE006086 NC_002663 | AAK02592.1 NP_245445.1 | Q9CNC4 | |
| WaaH | <i>Salmonella enterica</i> SARB25 | n.d. | AF519787 | AAM82550.1 | Q8KS93 | |
| WaaH | <i>Salmonella enterica</i> SARB3 | n.d. | AF519788 | AAM82551.1 | Q8KS92 | |
| WaaH | <i>Salmonella enterica</i> SARB39 | n.d. | AF519789 | AAM82552.1 | | |
| WaaH | <i>Salmonella enterica</i> SARB53 | n.d. | AF519790 | AAM82553.1 | | |
| WaaH | <i>Salmonella enterica</i> SARB57 | n.d. | AF519791 | AAM82554.1 | Q8KS91 | |
| WaaH | <i>Salmonella enterica</i> SARB71 | n.d. | AF519793 | AAM82556.1 | Q8KS89 | |
| WaaH | <i>Salmonella enterica</i> | n.d. | AF519792 | AAM82555.1 | Q8KS90 | |

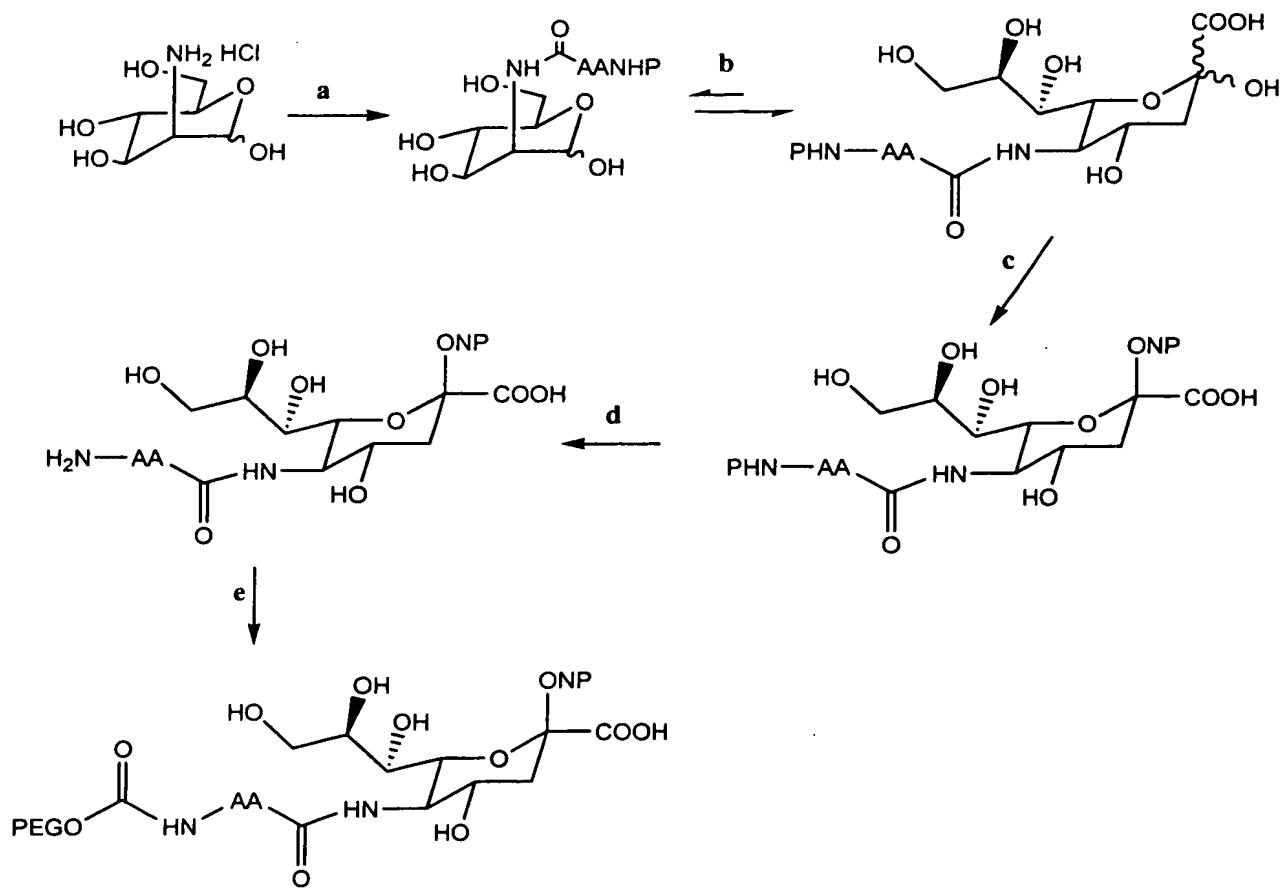
FIGURE 1M

| Protein | Organism | EC# | GenBank / GenPept | | SwissProt | PDB / 3D |
|--|--|----------|-----------------------|--|-----------|----------|
| | <i>SARB8</i> | | | | | |
| WaaH | <i>Salmonella enterica</i> <i>SARC10V</i> | n.d. | AF519779 | AAM88840.1 | Q8KS99 | |
| WaaH (fragment) | <i>Salmonella enterica</i> <i>SARC12</i> | n.d. | AF519781 | AAM88842.1 | | |
| WaaH (fragment) | <i>Salmonella enterica</i> <i>SARC13I</i> | n.d. | AF519782 | AAM88843.1 | Q8KS98 | |
| WaaH (fragment) | <i>Salmonella enterica</i> <i>SARC14I</i> | n.d. | AF519783 | AAM88844.1 | Q8KS97 | |
| WaaH | <i>Salmonella enterica</i> <i>SARC15II</i> | n.d. | AF519784 | AAM88845.1 | Q8KS96 | |
| WaaH | <i>Salmonella enterica</i> <i>SARC16II</i> | n.d. | AF519785 | AAM88846.1 | Q8KS95 | |
| WaaH (fragment) | <i>Salmonella enterica</i> <i>SARC3I</i> | n.d. | AF519772 | AAM88834.1 | Q8KSA4 | |
| WaaH (fragment) | <i>Salmonella enterica</i> <i>SARC4I</i> | n.d. | AF519773 | AAM88835.1 | Q8KSA3 | |
| WaaH | <i>Salmonella enterica</i> <i>SARC5IIa</i> | n.d. | AF519774 | AAM88836.1 | | |
| WaaH | <i>Salmonella enterica</i> <i>SARC6IIa</i> | n.d. | AF519775 | AAM88837.1 | Q8KSA2 | |
| WaaH | <i>Salmonella enterica</i> <i>SARC8</i> | n.d. | AF519777 | AAM88838.1 | Q8KSA1 | |
| WaaH | <i>Salmonella enterica</i> <i>SARC9V</i> | n.d. | AF519778 | AAM88839.1 | Q8KSA0 | |
| UDP-glucose : α -1,2-glucosyltransferase (WaaH) | <i>Salmonella enterica</i> subsp. <i>arizonaee</i> <i>SARC 5</i> | 2.4.1.- | AF511116 | AAM48166.1 | | |
| bifunctional α -2,3/-2,8-sialyltransferase (Cst-II) | <i>Campylobacter</i> <i>jejuni</i> ATCC 43449 | n.d. | AF401529 | AAL06004.1 | Q93CZ5 | |
| Cst | <i>Campylobacter</i> <i>jejuni</i> 81-176 | n.d. | AF305571 | AAL09368.1 | | |
| α -2,3-sialyltransferase (Cst-III) | <i>Campylobacter</i> <i>jejuni</i> ATCC 43429 | 2.4.99.- | AY044156 | AAK73183.1 | | |
| α -2,3-sialyltransferase (Cst-III) | <i>Campylobacter</i> <i>jejuni</i> ATCC 43430 | 2.4.99.- | AF400047 | AAK85419.1 | | |
| α -2,3-sialyltransferase (Cst-II) | <i>Campylobacter</i> <i>jejuni</i> ATCC 43432 | 2.4.99.- | AF215659 | AAG43979.1 | Q9F0M9 | |
| α -2,3/8-sialyltransferase (CstII) | <i>Campylobacter</i> <i>jejuni</i> ATCC 43438 | n.d. | AF400048 | AAK91725.1 | Q93MQ0 | |
| α -2,3-sialyltransferase cst-II | <i>Campylobacter</i> <i>jejuni</i> ATCC 43446 | 2.4.99.- | AF167344 | AAF34137.1 | | |
| α -2,3-sialyltransferase (Cst-II) | <i>Campylobacter</i> <i>jejuni</i> ATCC 43456 | 2.4.99.- | AF401528 | AAL05990.1 | Q93D05 | |
| α -2,3-/ α -2,8-sialyltransferase (CstII) | <i>Campylobacter</i> <i>jejuni</i> ATCC 43460 | 2.4.99.- | AY044868 | AAK96001.1 | Q938X6 | |
| α -2,3/8-sialyltransferase (Cst-II) | <i>Campylobacter</i> <i>jejuni</i> ATCC 700297 | n.d. | AF216647 | AAL36462.1 | | |
| ORF | <i>Campylobacter</i> <i>jejuni</i> GB11 | n.d. | AY422197 | AAR82875.1 | | |
| α -2,3-sialyltransferase cstIII | <i>Campylobacter</i> <i>jejuni</i> MSC57360 | 2.4.99.- | AF195055 | AAG29922.1 | | |
| α -2,3-sialyltransferase cstIII, Cj1140 | <i>Campylobacter</i> <i>jejuni</i> NCTC 11168 | 2.4.99.- | AL139077 NC 002163 | CAB73395.1 NP_282288.1 | Q9PNF4 | |
| α -2,3/ α -2,8-sialyltransferase II (cstII) | <i>Campylobacter</i> <i>jejuni</i> O:10 | n.d. | - AX934427 | AAO96669.1 CAF04167.1 | | |
| α -2,3/ α -2,8-sialyltransferase II (CstII) | <i>Campylobacter</i> <i>jejuni</i> O:19 | n.d. | AX934431 | CAF04169.1 | | |
| α -2,3/ α -2,8-sialyltransferase II (CstII) | <i>Campylobacter</i> <i>jejuni</i> O:36 | n.d. | AX934436 | CAF04171.1 | | |
| α -2,3/ α -2,8- | <i>Campylobacter</i> | n.d. | AX934434 | CAF04170.1 | | |

FIGURE 1N

| Protein | Organism | EC# | GenBank / GenPept | | SwissProt | PDB / 3D |
|--|------------------------------------|----------|-------------------------------|---|--------------|----------|
| sialyltransferase II (CstII) | <i>jejuni</i> O:4 | | | | | |
| α -2,3/ α -2,8-sialyltransferase II (CstII) | <i>Campylobacter jejuni</i> O:41 | n.d. | - - AX934429 | AAO96670.1 AAT17967.1 CAF04168.1 | | |
| α -2,3-sialyltransferase cst-I | <i>Campylobacter jejuni</i> OH4384 | 2.4.99.- | AF130466 | AAF13495.1 AAS36261.1 | Q9RGF1 | |
| bifunctional α -2,3/-2,8-sialyltransferase (Cst-II) | <i>Campylobacter jejuni</i> OH4384 | 2.4.99.- | AF130984 AX934425 | AAF31771.1 CAF04166.1 | 1RO7 1RO8 | C A |
| HI0352 (fragment) | <i>Haemophilus influenzae</i> Rd | n.d. | U32720 X57315 NC_000907 | AAC22013.1 CAA40567.1 NP_438516.1 | P24324 | |
| PM1174 | <i>Pasteurella multocida</i> PM70 | n.d. | AE006157 NC_002663 | AAK03258.1 NP_246111.1 | Q9CLP3 | |
| Sequence 10 from patent US 6503744 | Unknown. | n.d. | - | AAO96672.1 | | |
| Sequence 10 from patent US 6699705 | Unknown. | n.d. | - | AAT17969.1 | | |
| Sequence 12 from patent US 6699705 | Unknown. | n.d. | - | AAT17970.1 | | |
| Sequence 2 from patent US 6709834 | Unknown. | n.d. | - | AAT23232.1 | | |
| Sequence 3 from patent US 6503744 | Unknown. | n.d. | - | AAO96668.1 | | |
| Sequence 3 from patent US 6699705 | Unknown. | n.d. | - | AAT17965.1 | | |
| Sequence 34 from patent US 6503744 | Unknown. | n.d. | - | AAO96684.1 | | |
| Sequence 35 from patent US 6503744 (fragment) | Unknown. | n.d. | - - | AAO96685.1 AAS36262.1 | | |
| Sequence 48 from patent US 6699705 | Unknown. | n.d. | - | AAT17988.1 | | |
| Sequence 5 from patent US 6699705 | Unknown. | n.d. | - | AAT17966.1 | | |
| Sequence 9 from patent US 6503744 | Unknown. | n.d. | - | AAO96671.1 | | |

FIGURE 2



a. $\text{AG}^1 - \text{O} \begin{array}{c} \text{O} \\ \parallel \\ \text{C} \end{array} \text{AANHP}$, base; b. pyruvate, AS-Aldolase, buffer; c. synthetase, nucleotide phosphate;
d. deprotecting reagent; e. activated PEG

NP = nucleotide phosphate; P = protecting group; PEG = poly(ethylene glycol) or methoxy-poly(ethylene glycol)

FIGURE 3

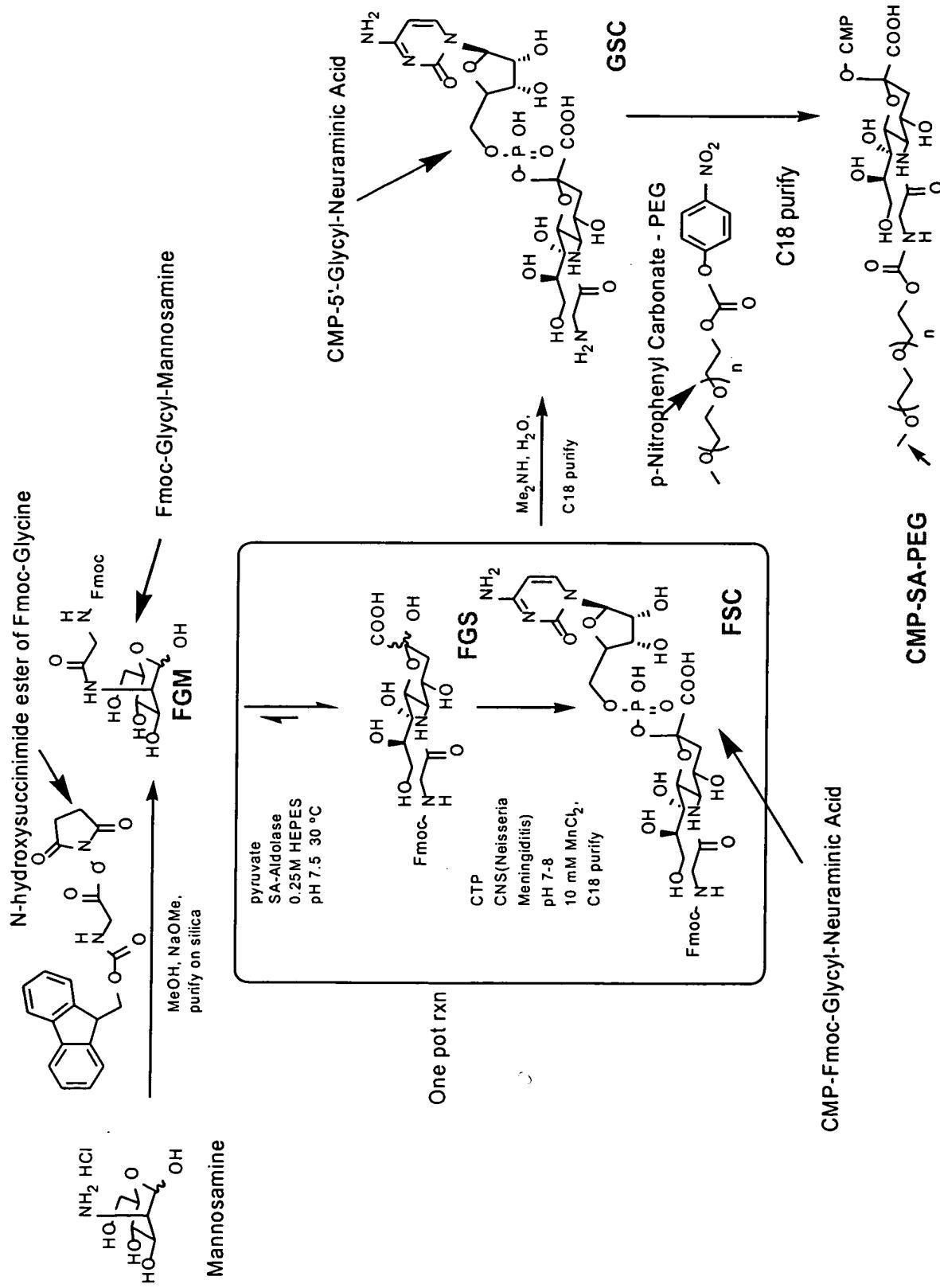


FIGURE 4

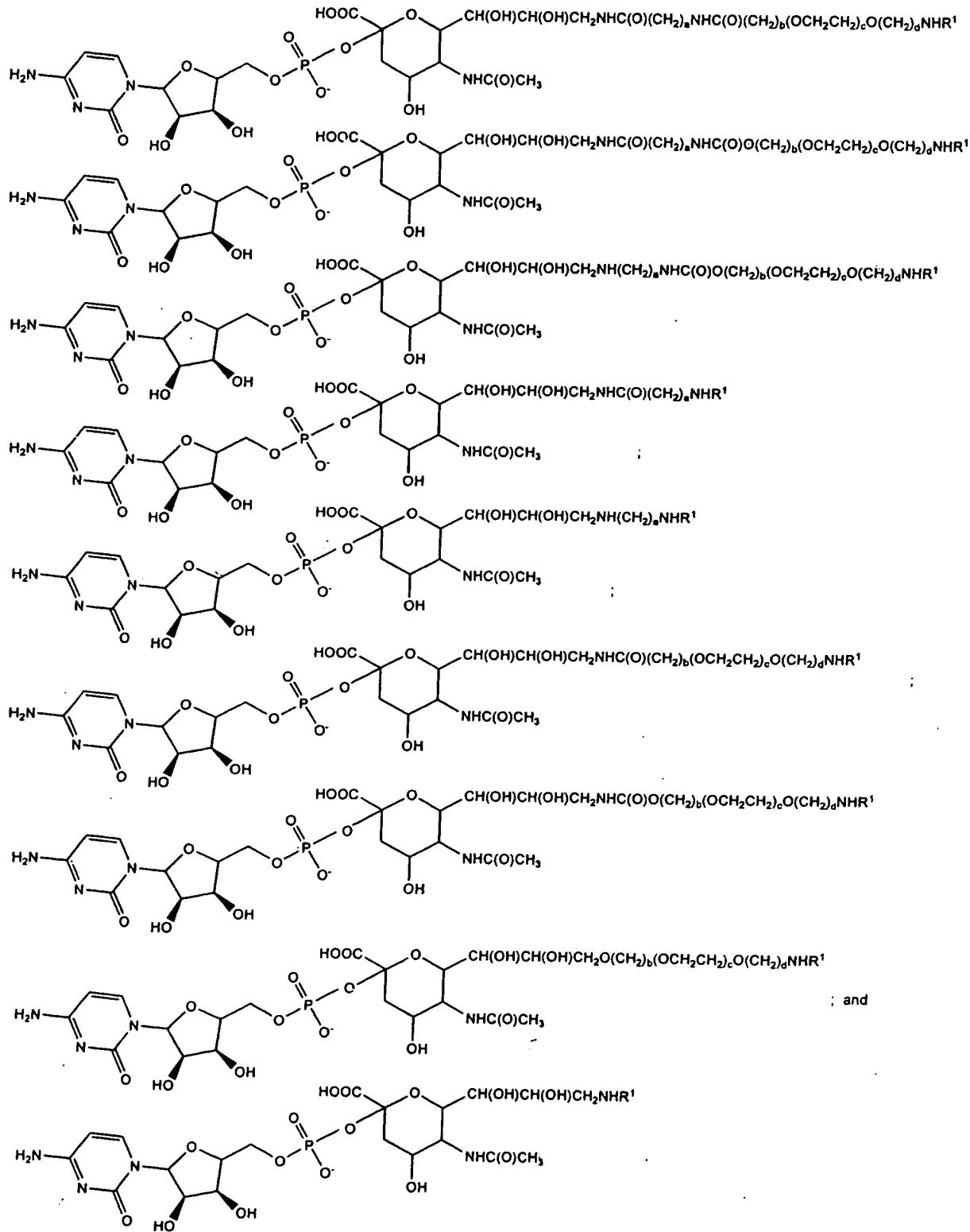


FIGURE 5

